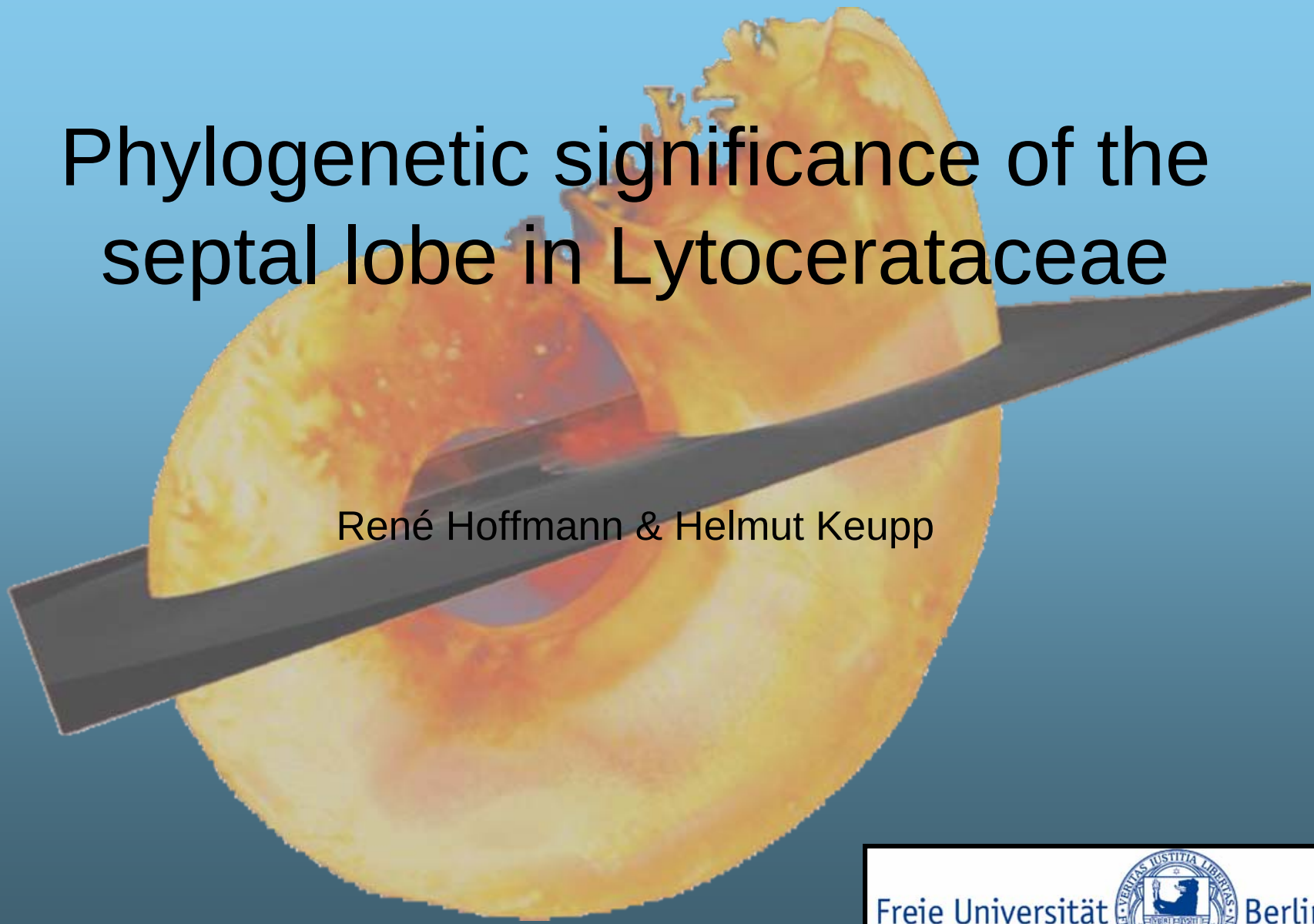
Phylogenetic significance of the septal lobe in Lytoceratoceae

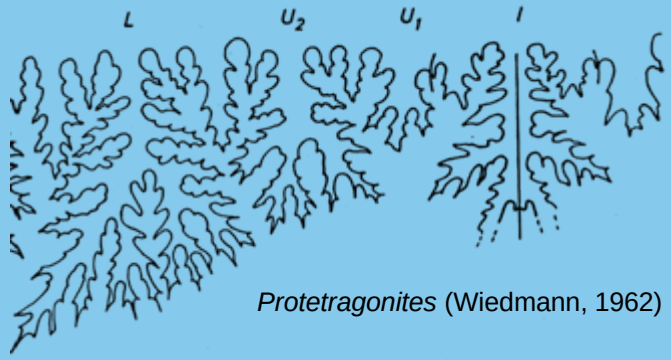
René Hoffmann & Helmut Keupp



Freie Universität Berlin

LYTOCERATACEAE

General features

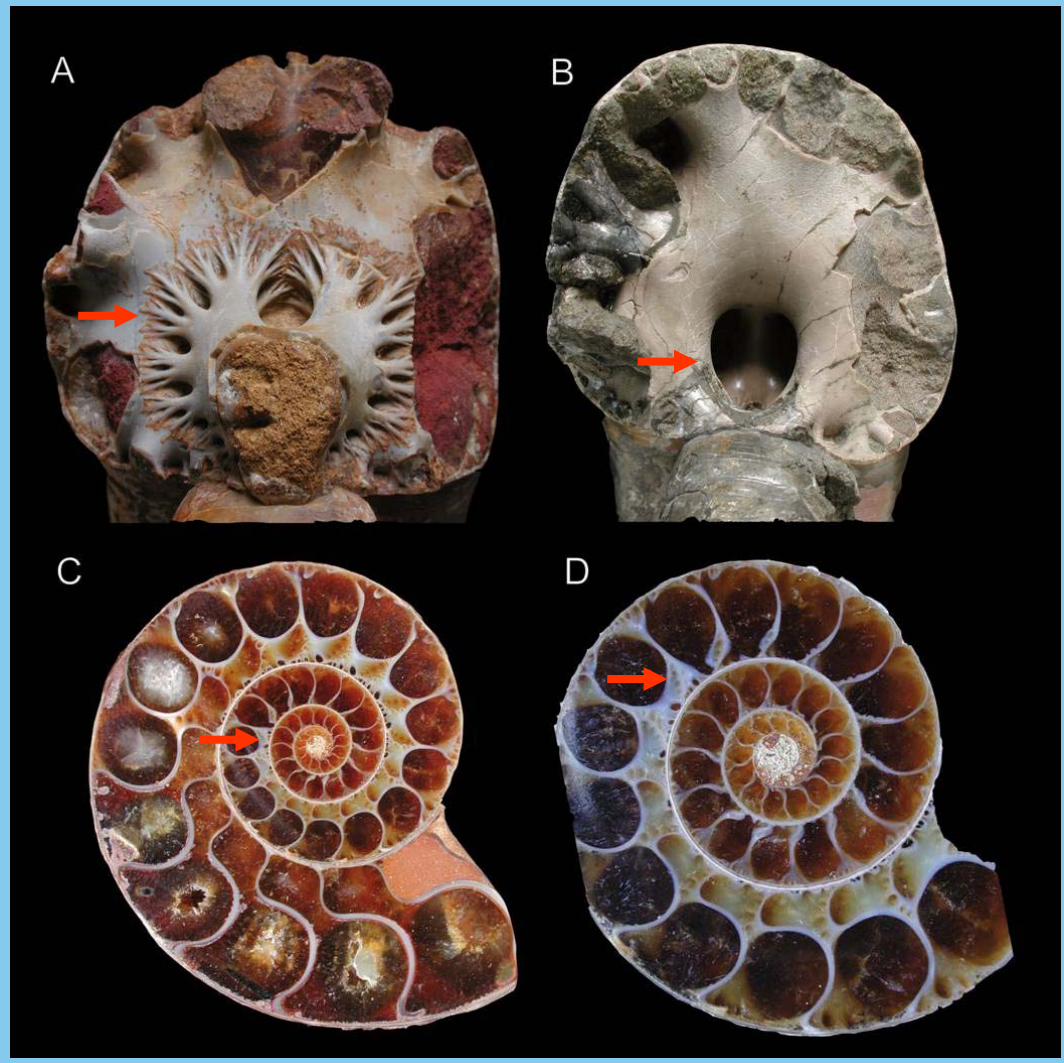


Protetragonites (Wiedmann, 1962)

Lytoceras siemensi (Denckmann), Lower Jurassic, Germany

- thin-walled shell
- usually weakly sculptured
- primary suture formula: ELU2U1I
- suture elements are microphyll (strongly slit)
- siphuncle position
- septal necks prochoanitic

HOW TO RECOGNIZE THE SEPTAL LOBE (ls)



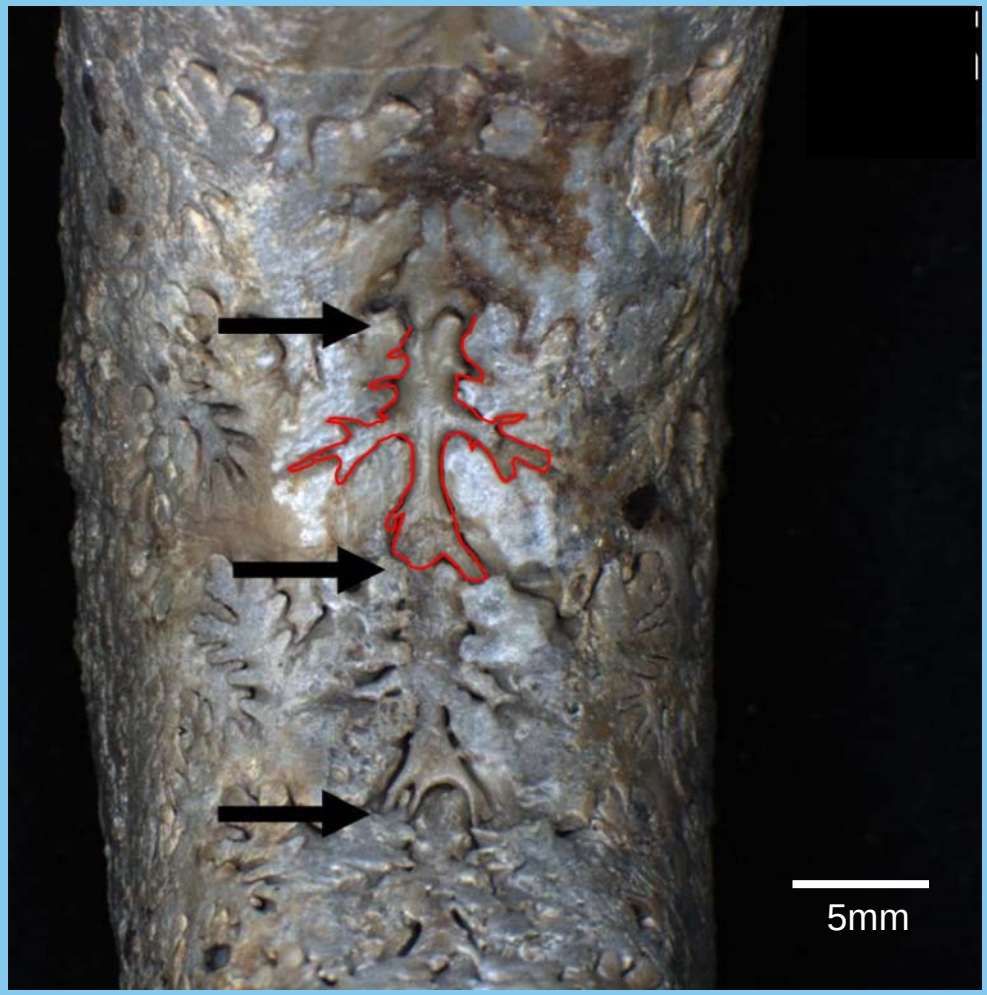
A: *Argonauticeras* sp., Lower Albian, Madagascar

B: *Eogaudryceras* sp., Lower Albian, Madagascar

C & D: *Eogaudryceras* sp., Lower Albian, Madagascar; 4.5cm

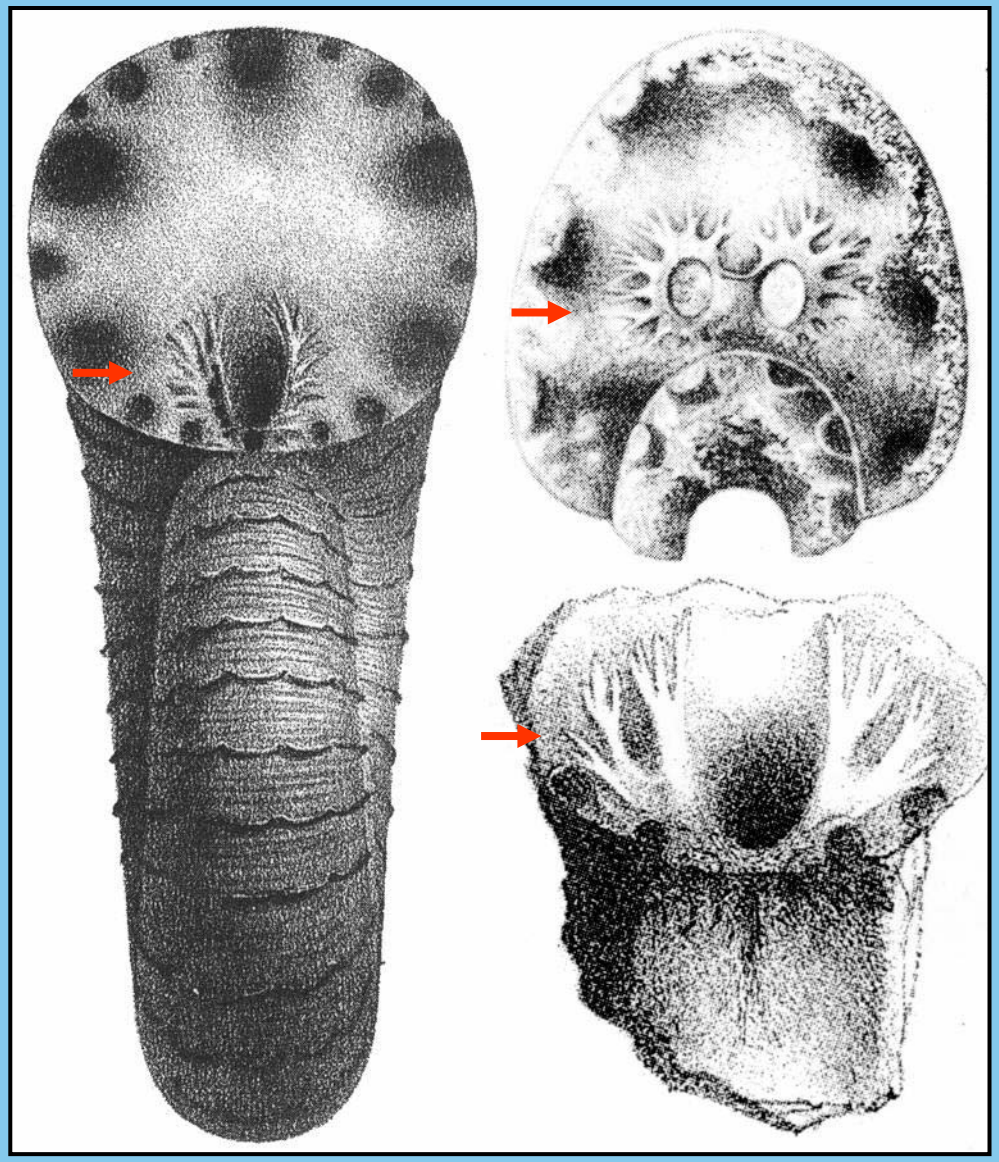
(coll. Keupp)

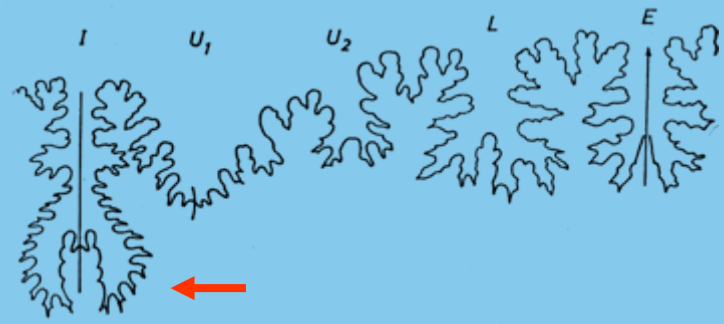
HOW TO RECOGNIZE THE SEPTAL LOBE (ls)



Lytoceras fimbriatum, Lower Pliensbachian, Germany (coll. Keupp)

LITERATURE INVESTIGATION





suture line of *Kossmatella* sp.
(Wiedmann, 1962)

left: *Lytoceras eudesianum* (d´Orbigny, 1845), Upper Bajocian

upper right : *Anagaudryceras lueneburgense* (Schlüter, 1872), Lower Maastrichtian

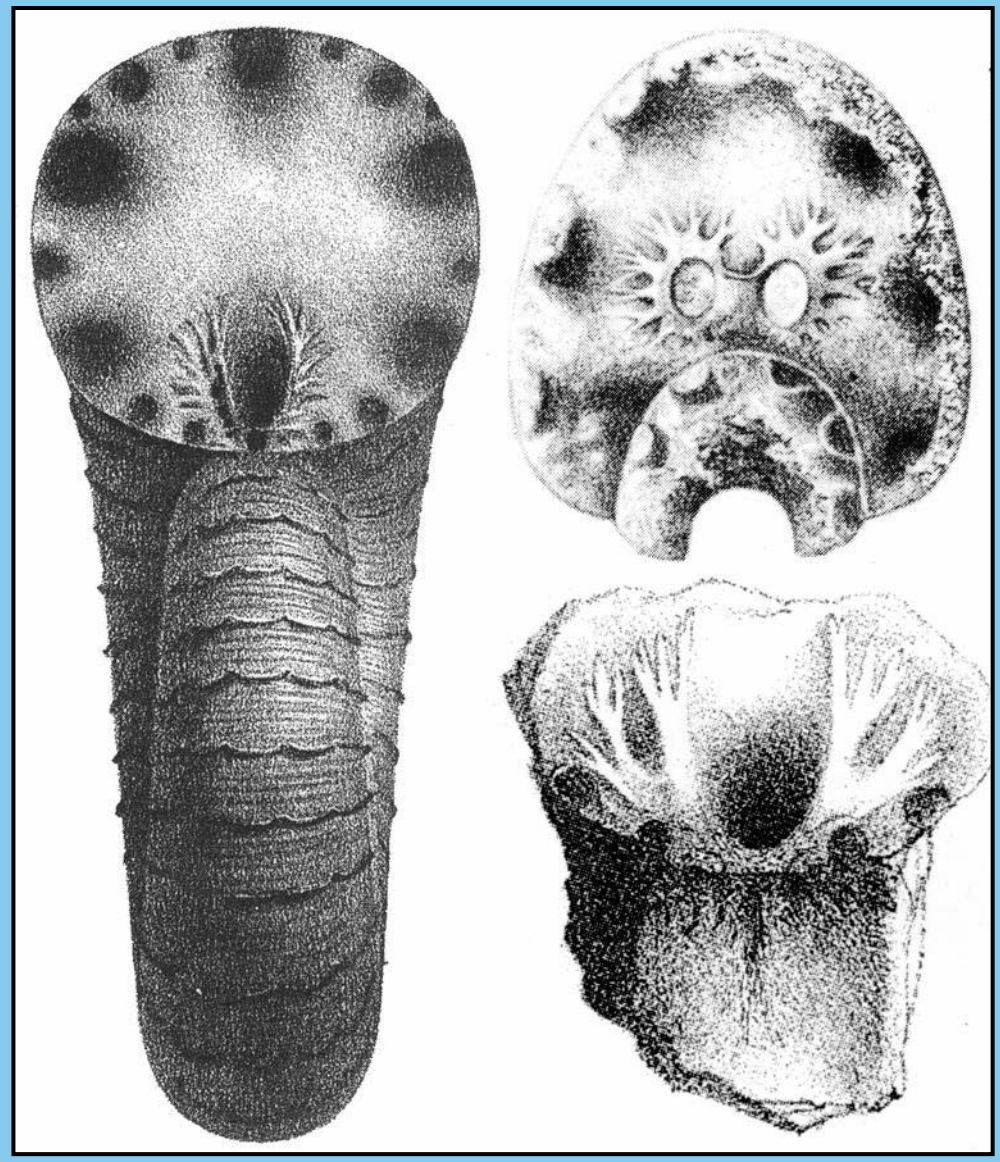
lower right: *L. eudesianum* (Quenstedt, 1858), Bajocian

LITERATURE INVESTIGATION

more than 4000 references

ca. 150 figs with ls

ca. 20 genera



MUSEUM INVESTIGATION

Lytoceras siemensi (Denckmann), Lower Jurassic, Germany

Museum für Naturkunde, Berlin

Freie Universität Berlin

Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Berlin

Geol.-Pal. Institut d. Universität Hamburg

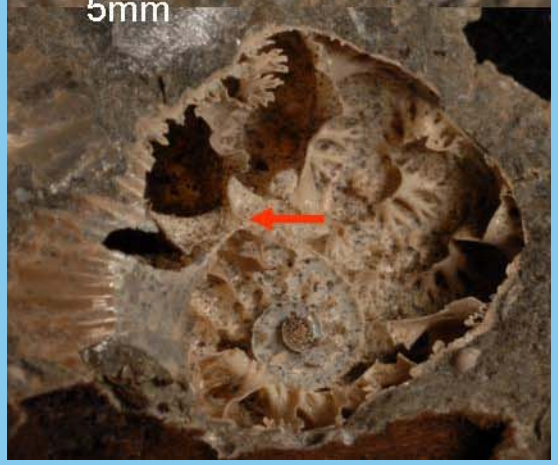
Staatliches Museum für Naturkunde, Stuttgart

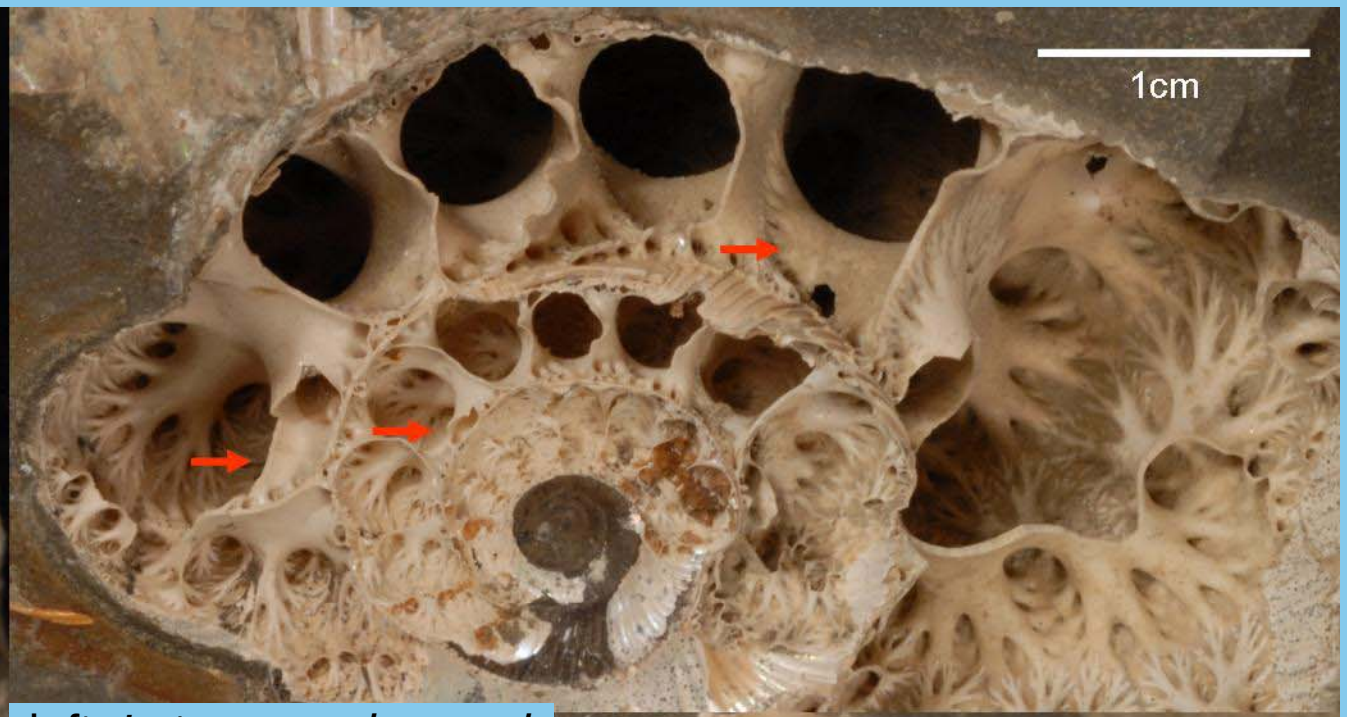
Ernst-Moritz-Arndt-Universität Greifswald

University of Tokyo

Geological Institute Tokyo

Private ammonoid collection of Prof. Keupp and Gero Moosleitner (Austria)





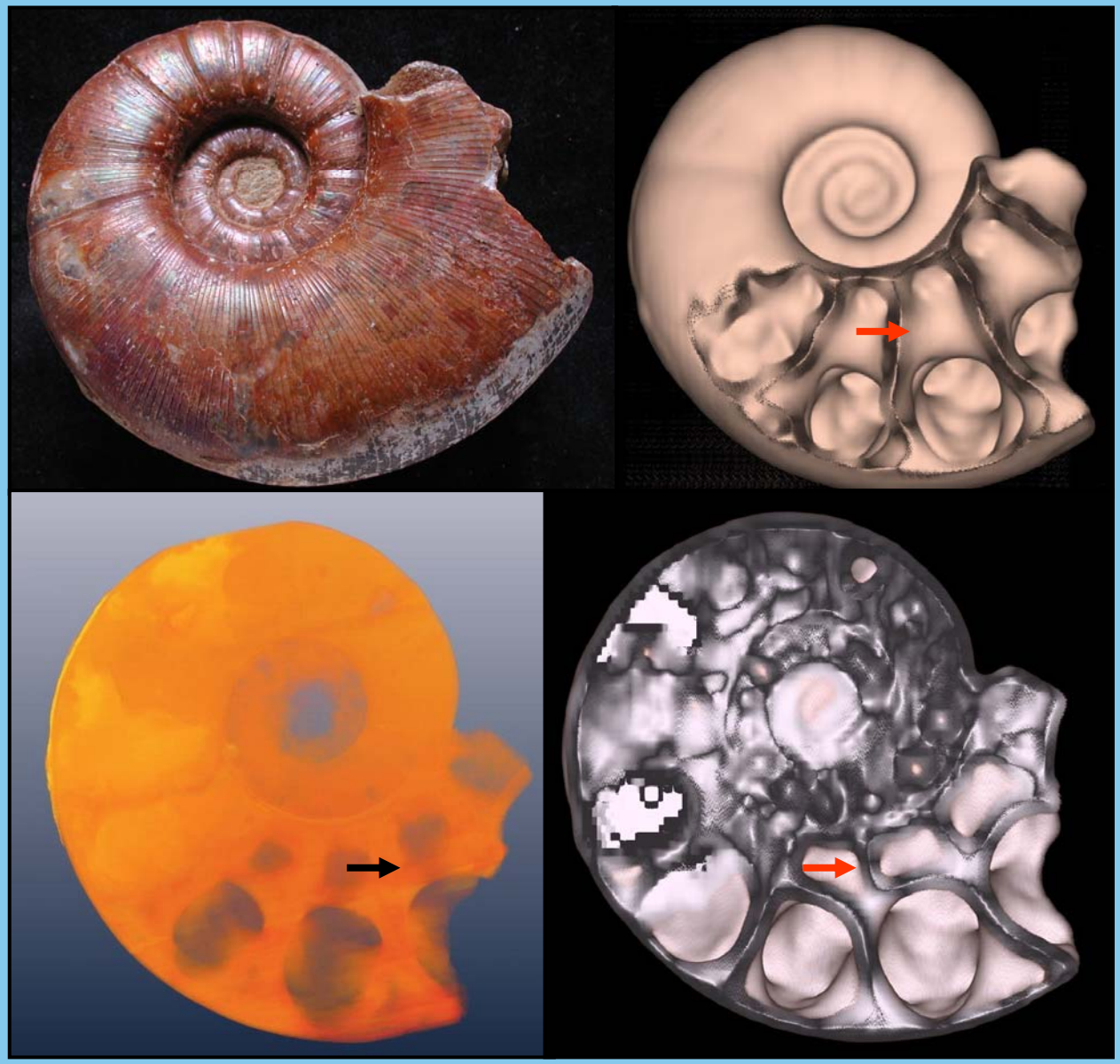
left: *Lytoceras siemensi*, Lower Toarcian, northern Germany, University of Greifswald

right: *Gaudryceras* sp. Upper Cretaceous, Kamchatka (coll. Dr. Y. Shigeta)

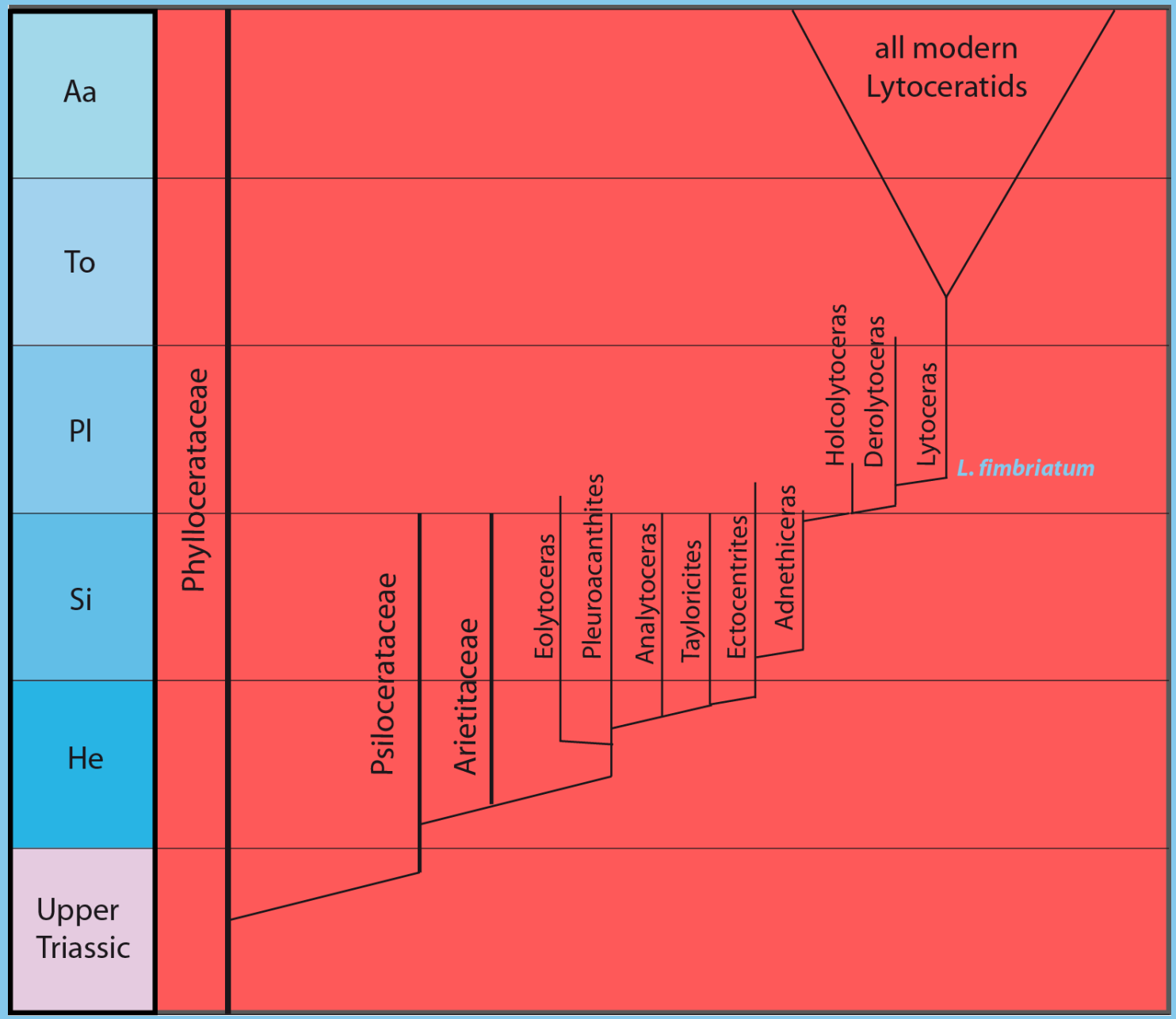
NEW TECHNICS

upper & lower right: visualized ct-scans

lower left: ct-scan visualized in volume rendering mode



Argonauticeras sp., Lower Albian, Madagascar, size: 7.5cm



Cladogram modified (Guex, 2004; Wiedmann, 1970)

Villania

Donovan, D. T. & Forsey, G. F. 1973 excluded from Lytoceratoceae into Eoderoceratoceae

Pictetia

trifid internal lobe – all other lytoceratid taxa with bifid internal lobe, lose coiling, no septallobe

Pictetia sp., Lower Albian, Madagascar, 7.0cm (coll. Keupp)

suture line drawing (Basse, 1952)

OUTLOOK

- PAUP analysis of all lytoceratid genera

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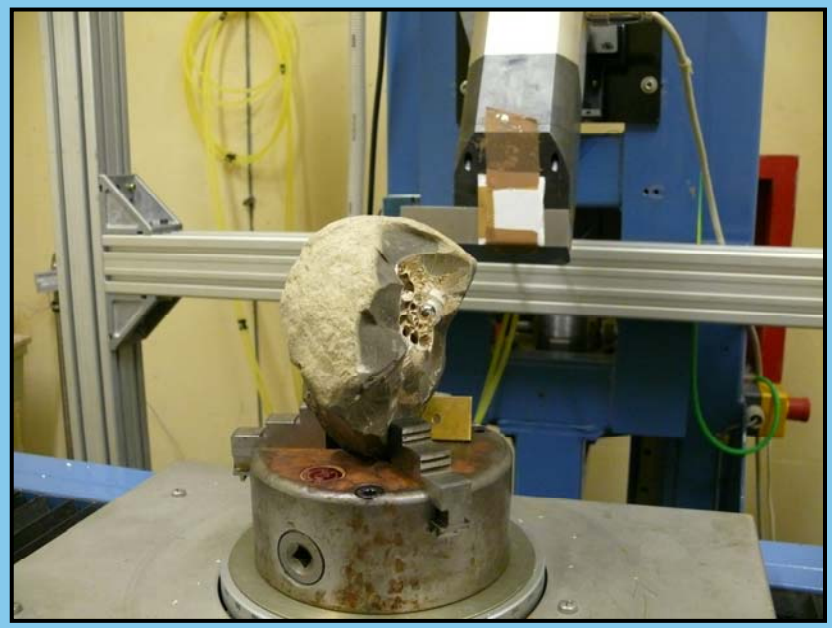
- clarify functional morphology *via* ct-scans of the shown well preserved specimen (volume/surface)



OUTLOOK

- PAUP analysis of all lytoceratid genera
- clarify functional morphology via scans of the shown the well preserved specimen (volume/surface)
- isotope analysis for habitat reconstruction

ACKNOWLEDGEMENTS

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Dr. Dieter Korn, Berlin

Gero Moosleitner, Austria